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| EXAMINER | |
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| BLEVINS, JERRY M | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/828,724 | HOSKING, LUCY G. | |
| | Examiner | Art Unit | |
| | Jerry Martin Blevins | 2883 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 April 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments, see pages 3 and 4, filed May 21, 2007, with respect to the rejection of claim(s) 1-38 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive.

Regarding applicant's argument that the obviousness rationale of the above rejections contains improper application of legal precedence, examiner maintains that the distinctions set forth in applicant's arguments are not set forth in the claimed invention. The alleged omitted elements due to the integration of the circuitry are not found in the claimed text, but merely a recitation that the limitations found within the body of the claim language are integrated into a single circuit board. The previously applied prior art teaches each and every limitation found in applicant's claim body, as set forth below, and merely fails to disclose the integration of those elements into a single circuit board. This integration, or lack thereof, need not imply any desirous omission of parts, but merely sets forth that the various components are united in a single body. Therefore, examiner contends that the facts of the Larson case are relevant to the present situation; namely the obviousness of integrating known components into a single body.

Applicant's arguments, see pages 2 and 3, filed May 21, 2007, with respect to the rejection(s) of claim(s) 39 under 35 U.S.C. 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further

consideration, a new ground(s) of rejection is made in view of a new interpretation of the previously applied reference.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6-11, 13, 15-19, 21-23, 25-27, 32-34, 36, 38, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/063800 A1 to Aronson et al.

Regarding claim 1, Aronson teaches a transmitter optical assembly (TOSA 103, Figure 2) comprising: a transmitter substrate (100) that includes a power line (19) and a conductive path (as described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the TOSA of Aronson); a laser source mounted on the transmitter substrate (again, described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the TOSA of Aronson); and a laser control (102) mounted on the transmitter substrate, the laser control communicably connected with one or more of the laser source, the power line, and the conductive path (Figure 2), the laser control comprising a memory portion (element 120, Figure 3, which gives greater detail to the control), the memory portion including one or more memory components for receiving or storing data (lines 4-18, page 4). Aronson does not teach that the components are all on one integrated circuit. It would have been obvious to

one of ordinary skill in the art at the time of the invention to integrate the assembly of Aronson on an integrated circuit, since it has been held that the use of a one piece construction instead of the non-integrated structure of the prior art would be merely a matter of obvious engineering choice. In re Larson 340 F 2d 965,968, 144 USPQ 347,349 (CCPA 1965). The motivation would have been to make the assembly smaller.

Regarding claim 10, Aronson teaches a receiver optical assembly (ROSA 102, Figure 2) comprising: a receiver substrate (100) that includes a power line (19) and a conductive path (as described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the ROSA of Aronson); a photodiode mounted on the receiver substrate (again, described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the ROSA of Aronson); an optical converter communicably connected with the photodiode, the optical converter for converting a received optical signal into an electrical signal (again, described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the ROSA of Aronson); and a processing control (102) mounted on the receiver substrate, the processing control communicably connected with one or more of the photodiode, the power line, and the conductive path (Figure 2), the processing control comprising a memory portion (element 120, Figure 3, which gives greater detail to the control), the memory portion including one or more memory components for receiving or storing data (lines 4-18, page 4). Aronson does not teach that the components are all on one integrated circuit. It would have been obvious to one of ordinary skill in the art at the time of the invention to integrate the assembly of Aronson on an integrated circuit, since

it has been held that the use of a one piece construction instead of the non-integrated structure of the prior art would be merely a matter of obvious engineering choice. In re Larson 340 F 2d 965,968, 144 USPQ 347,349 (CCPA 1965). The motivation would have been to make the assembly smaller.

Regarding claim 18, Aronson teaches a combination transmitter/receiver optical assembly (TOSA 103, ROSA 102, Figure 2) comprising: a combination transmitter/receiver substrate (100) that includes a power line (19) and a conductive path (as described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the TOSA/ROSA of Aronson); a photodiode mounted on the combination substrate, the photodiode configured to receive an optical signal from a fiber optic network (again, described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the TOSA/ROSA of Aronson); a laser source mounted on the combination substrate, the laser source configured to provide an optical signal to a fiber optic network (again, described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the TOSA/ROSA of Aronson); and a processing control (102) mounted on the receiver substrate, the processing control communicably connected with the laser source (Figure 2 and page 3, line 12 – page 4, line 3), the processing control comprising a memory portion (element 120, Figure 3, which gives greater detail to the control), the memory portion including one or more memory components for receiving or storing data (lines 4-18, page 4). Aronson does not teach that the components are all on one integrated circuit. It would have been obvious to one of ordinary skill in the art at the time of the invention to integrate the

assembly of Aronson on an integrated circuit, since it has been held that the use of a one piece construction instead of the non-integrated structure of the prior art would be merely a matter of obvious engineering choice. In re Larson 340 F 2d 965,968, 144 USPQ 347,349 (CCPA 1965). The motivation would have been to make the assembly smaller.

Regarding claim 19, Aronson teaches an optical converter communicably connected with the photodiode, the optical converter for converting a received optical signal into an electrical signal (page 3, line 12 – page 4, line 3).

Regarding claims 2, 22, and 23, Aronson teaches a laser modulator, the laser modulator administering an alternating current from the laser control to the laser source; and a laser bias, the laser bias administering a direct current from the laser control to the laser source (all, page 8, lines 17-29).

Regarding claim 3, 17, and 27, Aronson teaches a ground line (18), a diagnostic data line (16), and a diagnostic clock (15).

Regarding claims 4 and 13, Aronson teaches that the conductive path is a transmission line that carries data from the host to the optical assembly, wherein the data are ultimately transmitted at the laser source, and that the conductive path is also a data receiving line that carries data from the receiver optical assembly to the host (page 3, line 12 – page 4, line 3).

Regarding claim 6, Aronson teaches a monitor photodiode, the monitor photodiode communicably connected with the laser source and the laser control, the

monitor photodiode providing the laser control with status information about the laser source (page 3, line 12 – page 4, line 3 and page 7, lines 5-18).

Regarding claims 7, 15, and 25, Aronson teaches that the memory portion comprises one or more of EEPROM and a ROM (EEPROM 120).

Regarding claim 8, Aronson teaches that at least one of the memory components includes a portion that stores one or more of status and fault information, and operating temperature information (page 5, lines 12-23 and page 6, line 25 – page 7, line 18).

Regarding claims 9, 16, and 26, Aronson teaches that at least one of the one or more memory components includes a portion for receiving diagnostic data (page 7, lines 5-18).

Regarding claim 11, Aronson teaches that the processing control comprises a temperature sensor (page 5, line 24 – page 6, line 2).

Regarding claim 21, Aronson teaches that the processing control comprises a postamp (104).

Regarding claims 32 and 34, Aronson teaches that the laser control is directly connected to the laser source and that the processing control is directly connected to the photodetector (Figures 2 and 3, page 3, line 12 – page 4, line 3).

Regarding claim 33, Aronson renders obvious the limitations of the base claim 1. Aronson also teaches a direct connection between the laser control and the laser source (Figures 2 and 3, page 3, line 12 – page 4, line 3). Aronson does not teach that a bond wire achieves the connection. However, the use of bond wires to achieve electrical connection is standard practice, since bond wires are cost efficient and have

good electrical conductive properties. It would have been obvious to one of ordinary skill in the art at the time of the invention to achieve electrical connection between the laser control and the laser source using a bond wire. The motivation would have been to reduce costs and insure proper electrical connection.

Regarding claim 38, Aronson teaches a laser source and a photodiode and that the control circuitry is directly connected to the laser source and the photodiode (Figures 2 and 3, page 3, line 12 – page 4, line 3).

Regarding claim 36, Aronson teaches a substrate (Figure 2) that includes a power line (19) and a conductive path (page 3, line 12 – page 4, line 3); a laser driver (105) comprising a current source for driving a laser or a post amplifier for amplifying a signal received form a photodetector; and control circuitry (102) including laser control or processing control, the control circuitry mounted on the integrated circuit substrate (Figure 2), the control circuitry directly connected to the laser source or photodiode (Figures 2 and 3, page 3, line 12 – page 4, line 3), the control circuitry including a memory portion (Figure 3, element 120), the memory portion including one or more memory components for receiving or storing data. Aronson does not teach that the components are all on one integrated circuit. It would have been obvious to one of ordinary skill in the art at the time of the invention to integrate the assembly of Aronson on an integrated circuit, since it has been held that the use of a one piece construction instead of the non-integrated structure of the prior art would be merely a matter of obvious engineering choice. In re Larson 340 F 2d 965,968, 144 USPQ 347,349 (CCPA 1965). The motivation would have been to make the assembly smaller.

Regarding claim 39, Aronson teaches a system comprising: a host comprising: a host central processing unit (Figure 2, 102); a transmitter optical assembly (TOSA 103) connection; and a receiver optical assembly connection (ROSA 102); a transmitter optical assembly (103) connected to the transmitter optical assembly connection, the transmitter optical assembly comprising: a receiver circuit comprising: a transmitter substrate (100) that includes a power line (19) and a conductive path (page 3, line 12 – page 4, line 3); a laser source (page 3, line 12 – page 4, line 3) mounted on the transmitter substrate; and a laser control (102) mounted on the transmitter substrate, the laser control communicably connected with one or more of the laser source, the power line, and the conductive path (Figures 2 and 3, page 3, line 12 – page 4, line 3), the laser control comprising a memory portion (Figure 3, element 120), the memory portion including one or more memory components for receiving or storing data; and a receiver optical assembly (102) connected to the receiver optical assembly connection, the receiver optical assembly comprising: a transmitter circuit comprising: a receiver substrate (100) that includes a power line (19) and a conductive path (page 3, line 12 – page 4, line 3); a photodiode (page 3, line 12 – page 4, line 3) mounted on the receiver substrate; an optical converter communicably connected with the photodiode, the optical converter for converting a received optical signal into an electrical signal (page 3, line 12 – page 4, line 3); and a processing control (102) mounted on the receiver substrate, the processing control communicably connected with one or more of the photodiode, the power line, and the conductive path, the processing control comprising a memory portion, the memory portion comprising one or more memory components for

receiving or storing data (page 3, line 12 – page 4, line 3). Aronson does not teach that the receiver components are all on one integrated circuit and that the transmitter components are on one integrated circuit. It would have been obvious to one of ordinary skill in the art at the time of the invention to integrate the assemblies of Aronson on integrated circuits, since it has been held that the use of a one piece construction instead of the non-integrated structure of the prior art would be merely a matter of obvious engineering choice. In re Larson 340 F 2d 965,968, 144 USPQ 347,349 (CCPA 1965). The motivation would have been to make the assembly smaller.

Claims 5, 14, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aronson in view of US Patent to Chen, number 5,337,396.

Regarding claims 5, 14, and 29, Aronson renders obvious the limitations of the base claims 1, 10, and 27, respectively. Aronson does not teach that the substrate comprises ceramic materials, wherein circuit traces on the ceramic materials include three-dimensional metallic sputtering to shield electromagnetic interference. Chen teaches a ceramic substrate with metallic sputtering (inherently three-dimensional) to shield electromagnetic interference (column 1, lines 38-63). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Aronson with the ceramic substrate and metallic sputtering of Chen. The motivation would have been to protect the electronic components.

Claims 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aronson in view of US Pre Grant Publication to Buss et al., number 2002/0196501.

Regarding claims 12 and 24, Aronson renders obvious the limitations of the base claims 10 and 18, respectively. Aronson also teaches a bias control mounted on the substrate, communicatively connected with the optical converter and the processing control (page 8, lines 17-29). Aronson does not teach that the optical converter is an avalanche photodiode. Buss teaches an avalanche photodiode used for converting an optical signal into an electrical signal (page 1, paragraph 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Aronson with the avalanche photodiode of Buss. The motivation would have been to allow for electrical amplification of the signal (page 1, paragraph 4).

Claims 20, 35, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aronson in view of US Patent to Cohen et al., number 6,985,645.

Regarding claims 20 and 37, Aronson renders obvious the limitations of the base claims 18 and 34, respectively. Aronson does not teach a transimpedance amplifier. Cohen teaches a processing control communicably connected with a transimpedance amplifier (column 9, lines 12-24). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Aronson with the transimpedance amplifier of Cohen. The motivation would have been to achieve electrical amplification of the signal (column 9, lines 12-24).

Regarding claim 35, Aronson renders obvious the limitations of the base claim 10. Aronson does not teach a transimpedance amplifier. Cohen teaches a processing control communicably connected with a transimpedance amplifier (column 9, lines 12-24). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Aronson with the transimpedance amplifier of Cohen. The motivation would have been to achieve electrical amplification of the signal (column 9, lines 12-24). Aronson also teaches a direct connection between the photodetector and an amplifier (Figures 2 and 3, page 3, line 12 – page 4, line 3). Aronson does not teach that a bond wire achieves the connection. However, the use of bond wires to achieve electrical connection is standard practice, since bond wires are cost efficient and have good electrical conductive properties. It would have been obvious to one of ordinary skill in the art at the time of the invention to achieve electrical connection between the photodetector and the amplifier using a bond wire. The motivation would have been to reduce costs and insure proper electrical connection.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aronson in view of US Patent to Hamilton-Gahart et al., number 6,665,497.

Regarding claim 28, Aronson renders obvious the limitations of the base claim 27. Aronson does not teach an I2C or MDIO circuitry. Hamilton-Gahart teaches diagnostic data communicated to a processing control from a host by I2C circuitry (column 9, lines 8-16 and column 10, lines 20-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Aronson with the I2C

circuitry of Hamilton-Gahart. The motivation would have been to provide status information for the converter (column 10, lines 20-30).

Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aronson in view of US Pre Grant Publication to Brezina et al., number 2003/0085452.

Regarding claim 30, Aronson teaches an optical transceiver (Figure 2) comprising a fiber optic subassembly (TOSA 103, ROSA 102) operably attached to the optical transceiver, the fiber optic subassembly comprising: at least one of a transmitter and/or a receiver, a combination transmitter/receiver substrate (100) including a power line (19) and a conductive path (page 3, line 12 – page 4, line 3); and means operably disposed within the fiber optic subassembly for communicating high frequency optical data, wherein the means for communicating optical data includes one or more conventional optical transceiver components within the fiber optic subassembly (Figure 2 and page 3, line 12 – page 4, line 3). Aronson does not explicitly teach that the impedance of the data is minimized by the transceiver components. Brezina teaches reducing impedance of high frequency data using transceiver components (page 4, paragraph 58). It would have been obvious to one of ordinary skill in the art at the time of the invention to minimize the impedance of high frequency data using transceiver components, as taught by Brezina, in the transceiver of Aronson. The motivation would have been to improve the transmission of the data. Aronson also does not teach that the components are all on one integrated circuit. It would have been obvious to one of

ordinary skill in the art at the time of the invention to integrate the assembly of Aronson on an integrated circuit, since it has been held that the use of a one piece construction instead of the non-integrated structure of the prior art would be merely a matter of obvious engineering choice. In re Larson 340 F 2d 965,968, 144 USPQ 347,349 (CCPA 1965). The motivation would have been to make the assembly smaller.

Regarding claim 31, Aronson teaches a photodiode mounted on the combination substrate, the photodiode configured to receive an optical signal from a fiber optic network (again, described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the TOSA/ROSA of Aronson); a laser source mounted on the combination substrate, the laser source configured to provide an optical signal to a fiber optic network (again, described on page 3, line 12 – page 4, line 3 as regarding the prior art, this feature belonging also to the TOSA/ROSA of Aronson); and a processing control (102) mounted on the receiver substrate, the processing control communicably connected with the laser source (Figure 2 and page 3, line 12 – page 4, line 3), the processing control comprising a memory portion (element 120, Figure 3, which gives greater detail to the control), the memory portion including one or more memory components for receiving or storing data (lines 4-18, page 4).

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMB

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